

AMENDMENTS TO THE CLAIMS

Kindly cancel claims 16 and 20. Kindly add new claims 21-22 and amend the remaining claims as follows.

5 CLAIMS

Claim 1. (currently amended): A cell sorter comprising:

10 ~~[at least one]~~ a stepping precision pump coupled to a
fluid inlet port, ~~[whereby]~~ said pump causing fluid
containing desired cells ~~[is caused]~~ to enter said
inlet port;

15 a cell detection system fluidly coupled to said inlet
port, said cell detection system determining whether a
particular cell is a desired cell;

20 a sorting gate with at least two states fluidly
coupled to said cell detection system, said sorting
gate allowing said desired cell to exit a cell
collection port and allowing waste to exit a waste
port;

a control unit connected to said pump, said cell
detection system and said sorting gate, said control
unit processing information from said cell detection
system and causing said pump to stop and causing said
5 sorting gate to select said cell collection port when
a desired cell is in a proper position to exit said
cell collection port.

Claim 2. (original): The cell sorter of claim 1 wherein
10 said sorting gate is magnetostrictive.

Claim 3. (original): The cell sorter of claim 1 wherein
said cell detection system is optical.

15 Claim 4. (original): The cell sorter of claim 3 wherein
said cell detection system uses fluorescence.

Claim 5. (original): The cell sorter of claim 3 wherein
said cell detection system uses scattered light.

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Claim 6. (original): The cell sorter of claim 3 wherein
said cell detection system uses both fluorescence and
scattered light.

Claim 7. (original): The cell sorter of claim 6 wherein a fluorescence and scattered light determination is made simultaneously.

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Claim 8. (currently amended): A cell sorter system for sorting desired cells from undesired matter comprising:

10 a stepping precision pump [~~for~~] coupled to a
capillary;

an optical detection system in proximity to said
capillary; and

15 a magnetostrictive gate switching between a cell exit
port and a waste port in said capillary;

20 said pump pumping cell-containing fluid into [~~a~~] the
capillary and controlling positions of [~~said~~] cells in
said capillary by stopping flow when [~~an~~] said
optical detection system [~~for determining when~~]
determines a desired cell is in a predetermined
position in said capillary;

[a] said magnetostrictive gate ~~[controlled by a
magnetic field that causes]~~ switching flow from said
waste port to said cell exit port when said pump stops
5 allowing [a] the desired cell to pass through [a] said
cell exit port by pulsing the pump to move said cell
through said cell exit port ~~[and waste material to pass
through a waste port,]~~.

10 ~~[a vacuum system to cause said desired cell to exit
said cell exit port.]~~

Claim 9. (currently amended): The cell sorter system of
claim 8 further comprising a means for applying [said] a
15 magnetic field to said magnetostrictive gate, whereby said
magnetostrictive gate switches from ~~[a first exit port to a
second exit port]~~ said waste port to said cell exit port.

Claim 10. (currently amended): The cell sorter system of
20 claim 8 wherein said optical detection system uses
fluorescence.

Claim 11. (currently amended): The cell sorter system of claim 8 wherein said optical detection system uses scattered light.

5 Claim 12. (currently amended): The cell sorter system of claim 8 wherein said optical detection system uses both fluorescence and scattered light simultaneously.

Claim 13. (currently amended): The cell sorter system of
10 claim 8 wherein said optical detection system [~~uses~~]
includes a photomultiplier.

Claim 14. (currently amended): The cell sorter system of claim 8 wherein said optical system [~~uses~~] includes a diode
15 array.

Claim 15. (currently amended): A method for sorting cells comprising:

20 causing fluid containing cells to enter an inlet port of a capillary by pumping said fluid with a stepping precision pump;

causing said fluid to pass through an optical
detection region where said fluid is exposed to light
of at least one predetermined wavelength, [whereby]
wherein scattered light or fluorescence from said
5 cells[, ~~or fluorescence from said cells,~~] is used to
choose [~~desired cells~~] a particular desired cell;

stopping said stepping precision pump when said
10 particular desired cell is in a predetermined position
in proximity to a cell exit port;

~~[causing a magnetostrictive gate to sort said cells~~
~~causing desired cells to pass through a cell exit gate~~
15 ~~depending on a decision made from said light, whereby~~
~~selected cells exit by said cell exit gate];~~

applying a magnetic field to a magnetostrictive gate
causing said magnetostrictive gate to open said cell
20 exit port;

pulsing said stepping precision pump to cause said
particular desired cell to pass through said cell exit
port;

5 ~~[causing said selected cells to exit said cell exit~~
~~gate.]~~

removing said magnetic field from said
magnetostrictive gate causing said magnetostrictive
gate to close said cell exit port;

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drawing said particular desired cell from said exit
port.

Claim 16. (cancelled).

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Claim 17. (original): The method of claim 15 wherein said
magnetostrictive gate contains a magnetostrictive rod.

Claim 18. (original): The method of claim 17 wherein said
20 magnetostrictive rod changes length in an applied magnetic
field.

Claim 19. (currently amended): The method of claim 15
wherein said ~~[optical system contains optical fibers]~~ light
is directed into said optical detection region by fiber
optics.

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Claim 20. (cancelled).

Claim 21. (new): The cell sorter of claim 1 further
comprising said control unit pulsing said pump to pump an
10 amount of fluid sufficient to move said selected cell into
said cell collection port after said sorting gate has
selected said cell collection port.

Claim 22. (new) The method of claim 15 wherein the step of
15 drawing said particular desired cell from said exit port is
performed using a vacuum.

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